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Vinod K. Grover

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KLARQUIST SPARKMAN LLP
121 S.W. SALMON STREET
SUITE 1600
PORTLAND, OR 97204

EXAMINER

TECKLU, ISAAC TUKU

ART UNIT

PAPER NUMBER

2192

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/628,054	GROVER ET AL.	
	Examiner	Art Unit	
	ISAAC T. TECKLU	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 17-23, 26-32, 34-37, 39-41 and 43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 17-23, 26-32, 34-37, 39-41 and 43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/30/04-09/162008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-15, 17-23, 26-32, 34-37, 39-41 and 43 have been reexamined.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/16/08 has been entered.

Information Disclosure Statement

3. The information disclosure statement filed on 09/16/08, fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because the cited document is not referred to by date or place of publication. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

Response to Arguments

4. Applicant's arguments with respect to claims 1-15, 17-23, 26-32, 34-37, 39-41 and 43 have been considered but are moot in view of the new ground(s) of rejection. See Koizumi et al. (US 2002/0026633 A1), art made of record above.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 1, 4-13, 15, 17-23, 26-27, 30-32, 34-37, 39-41 and 43 are rejected under 35 U.S.C. 102(a) as being anticipated by Koizumi et al. (US 2002/0026633 A1).

Per claim 1 (Currently Amended), Koizumi discloses one or more computer-readable media with computer-executable instructions for implementing a software development architecture (e.g. see at least FIG. 1 and related text) comprising:

a software development scenario-independent intermediate representation format (paragraph [0016] "... intermediate language program which is independent...");

one or more exception handling models operable to support a plurality of programming language specific exception handling models for a plurality of different source languages (e.g. see at least FIG. 2, 3102, 3104 and related text);

a type system operable to represent the type representations of a plurality of source languages (e.g. FIG. 1, 1006, 1004, 1013 and related text); and

a code generator operable to generate code targeted for a plurality of execution architectures (e.g. see at least FIG. 1, 1018, 1015, 1016 and related text);

wherein the code generator constructs one or more software development components of software development tools (e.g. FIG. 1, 1011, 1016 and related text) using the software development scenario-independent intermediate representation format (paragraph [0016] “... intermediate language program which is independent...”), the one or more exception handling models (e.g. see at least FIG. 2, 3102, 3104 and related text), and the type system (e.g. FIG. 1, 1006, 1004, 1013 and related text).

Per claim 4, Koizumi discloses the one or more computer-readable media of claim 1 wherein the software development architecture is operable to produce a software development tool modifiable by combining a modification component with the software development architecture (e.g. FIG. 1, MACHINE INSTRUCTION GENERATING RULES 1022 and related text”).

Per claim 5, Koizumi discloses the one or more computer-readable media of claim 1 wherein the software development architecture is operable to produce a software development

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tool by dynamically linking a binary version of the software development architecture to a modification component (e.g. see at least FIG. 1, 1002, LINKER and related text).

Per claim 7, Koizumi discloses the one or more computer-readable media of claim 1 wherein the architecture is combinable with one or more software development components (e.g. see at least FIG. 2, 3102, 3104 and related text).

Per claim 8, Koizumi discloses the one or more computer-readable media of claim 7 wherein the one or more software development components comprise data describing a target software development tool (e.g. FIG. 1, MACHINE INSTRUCTION GENERATING RULES 1022 and related text”).

Per claim 9, Koizumi discloses the one or more computer-readable media of claim 7 wherein the one or more software development components provides target execution architecture data to the code generator (e.g. see at least FIG. 1, 1018, 1015, 1016 and related text).

Per claim 10, Koizumi discloses the one or more computer-readable media of claim 7 wherein the one or more software development components provide one or more type-checking rules to the type system (paragraph [0371] “... matching ... checking to which of the pattern...”).

Per claim 11, Koizumi discloses the one or more computer-readable media of claim 7 wherein the one or more software development components provide a set of class extension declarations to the architecture (e.g. see at least FIG. 13-16 and 26 and related text).

Per claim 12, Koizumi discloses the one or more computer-readable media of claim 7 wherein the combined one or more software development components and architecture produce a target software development tool (e.g. see at least FIG. 1, 1011, 1016 and related text).

Per claim 13, Koizumi discloses the one or more computer-readable media of claim 12 wherein the target software development tool comprises a native compiler (e.g. see at least FIG. 1, 1001 and related text).

Per claim 15 (Currently Amended), Koizumi discloses a method of creating a target software development tool, the method comprising:

receiving at least one computer-readable specification specifying functionality specific to one or more software development scenarios (e.g. see at least FIG. 1, 1013, 1018, and related text);

creating at least one software development component for the software development tool from the at least one specification (e.g. see at least FIG. 1, 1016 and related text); ~~and~~

integrating the at least one software development component for the software development tool into a software development scenario-independent framework (paragraph [0016] “... intermediate language program which is independent...” and e.g. FIG. 1, 1006 and related text) and;

compiling the at least one software development component and framework to create the target software development tool (e.g. FIG. 1, 1001 and related text);

wherein the computer-readable specification comprises functionality for processing an intermediate representation format capable of representing a plurality of different programming languages; and (e.g. see at least FIG. 1, 1006, 1004, 1013 and related text)

wherein the intermediate representation format comprises one or more exception handling models capable of supporting a plurality of programming language-specific exception handling models for the plurality of different programming languages (e.g. see at least FIG. 2, 3102, 3104 and related text).

Per claim 17, Koizumi discloses the method of claim 15 wherein software development components created from a plurality of computer-readable specifications for a plurality of respective software development scenarios are integrated into the framework (e.g. see at least FIG. 1, 1012, 1017 and related text).

Per claim 18, Koizumi discloses the method of claim 17 wherein the plurality of computer-readable specifications specify functionality for the following respective software development scenarios: target execution architecture; input language or input binary format (e.g. FIG. 8, 3240 and related text).

Per claim 19, Koizumi discloses the method of claim 15 wherein the computer-readable specification specifies functionality for target execution architecture of the software development tool (e.g. see at least FIG. 1, 1012, 1017 and related text).

Per claim 20, Koizumi discloses the method of claim 15 wherein the computer-readable specification specifies functionality for accommodating an input language for the software development tool (e.g. see at least FIG. 1, 1006, 1004 and related text).

Per claim 21, Koizumi discloses the method of claim 15 wherein the computer-readable specification specifies functionality for accommodating a binary input for the software development tool (e.g. see at least FIG. 1, 1006, 1004 and related text).

Per claim 22, Koizumi discloses the method of claim 15 wherein the computer-readable specification comprises one or more rule sets for type-checking one or more languages (e.g. see at least FIG. 2, 3102, 3104 and related text).

Per claim 23, Koizumi discloses the method of claim 15 wherein the computer-readable specification comprises a set of class extension declarations specific to one or more of the software development scenarios (e.g. see at least FIG. 13-16 and 26 and related text).

Per claim 26, Koizumi discloses the method of claim 15 wherein the intermediate representation comprises type representations capable of representing the type representations

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of the plurality of different programming languages (e.g. see at least FIG. 1, 1006, 1004 and related text).

Per claim 27, Koizumi discloses the method of claim 15 further comprising: integrating custom code specific to one of the software development scenarios (paragraph [0016] “... intermediate language program which is independent...”).

Per claim 30, Koizumi discloses one or more computer-readable media containing one or more computer-executable instructions for performing the method of claim 15 (see the rejection to claim 15 above).

Per claim 31, Koizumi discloses a method of creating a target software development tool from a common framework, the method comprising: configuring the common framework based on one or more characteristics of the target software development tool;

integrating data comprising one or more characteristics of the target software development tool into the common framework (e.g. see at least FIG. 1, 1006, 1004 and related text); and

creating the target software development tool from the integrated common framework (e.g. see at least FIG. 1, 1011, 1016 and related text).

wherein the one or more characteristics comprises an input language chosen from a plurality of different programming languages supported by the common framework for the target software development tool and (e.g. see at least FIG. 1, 1006, 1004 and related text);

wherein the common framework comprises exception handling models capable of supporting a plurality of programming language-specific exception handling models for the plurality of different programming languages (e.g. see at least FIG. 2, 3102, 3104 and related text).

Per claim 32, Koizumi discloses the method of claim 31 wherein the one or more characteristics can further comprise the amount of memory necessary for the target software development tool to execute on a target architecture (e.g. see at least FIG. 1, 1008 and related text), the speed at which the target software development tool will execute on a target architecture (e.g. see at least FIG. 1, 1012 and related text), a input binary format for the target software development tool (e.g. see at least FIG. 1, 1006 and related text), or the target architecture for the target software development tool to execute on a target architecture (e.g. see at least FIG. 1 and related text).

Per claim 34, Koizumi discloses a method of producing inter-compatible software development tools, the method comprising:

creating a first software development tool from a software development architecture that is operable to support a plurality of different programming languages(e.g. see at least FIG. 1, 1006, 1004, 1013 and related text); and

creating a second software development tool based on the first software development tool, wherein the second software development tool dynamically links to a binary version of the software development architecture (e.g. FIG. 1, LINKER and related text).

wherein the software development architecture comprises functionality for exception handling models operable to support programming-language specific exception handling models for the plurality of different programming languages, and the software development architecture is used by both the first and second software development tools (e.g. see at least FIG. 2, 3102, 3104 and related text).

Per claim 35, Koizumi discloses the method of claim 34 wherein the binary version of the software development architecture contains classes that are extensible through a set of declarations (e.g. see at least FIG. 13-16 and 26 and related text).

Per claim 36, Koizumi discloses the method of claim 34 wherein the software development architecture comprises functionality for an intermediate representation format used by both the first and second software development tools (paragraph [0016] “... intermediate language program which is independent...”).

Per claim 37, Koizumi discloses the method of claim 34 wherein the software development architecture comprises functionality for a type system used by both the first and second software development tools (e.g. see at least FIG. 1, 1012, 1017 and related text).

Per claim 39, Koizumi discloses a method of modifying a software development tool, the software development tool having been created using a software development architecture that is operable to support a plurality of different programming languages (e.g. see at least FIG. 1,

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1006, 1004 and related text) and comprising one or more software development components, the method comprising:

dynamically linking a software development component not present in the software development architecture to a binary version of the software development architecture (e.g. see at least FIG. 1, 1002 and related text); and

creating a modified software development tool from the dynamically linked binary version and the software development component (e.g. see at least FIG. 1, 1009 and related text).

wherein the binary version of the software development architecture comprises functionality for exception handling models operable to support a plurality of programming language specific exception handling models for the plurality of different programming languages used by the modified software development tool_(e.g. see at least FIG. 2, 3102, 3104 and related text).

Per claim 40, Koizumi discloses the method of claim 39 wherein the binary version of the software development architecture comprises classes that are extensible through a set of declarations (e.g. see at least FIG. 13-16 and 26 and related text).

Per claim 41, Koizumi discloses the method of claim 39 wherein the binary version of the software development architecture comprises functionality for a type system used by the modified software development tool (e.g. see at least FIG. 1, 1009 and related text).

Per claim 43, Koizumi discloses a method of creating a software development tool, the method comprising:

receiving at least one computer-executable file comprising:

an intermediate representation capable of representing a plurality of different programming languages and computer executable images (paragraph [0016] "... intermediate language program which is independent...");

one or more exception handling models capable of supporting a plurality of programming language specific exception handling models for the plurality of different programming languages(e.g. see at least FIG. 2, 3102, 3104 and related text);

a type system capable of representing the type representations of a plurality of source languages (e.g. FIG. 1, 1006, 1004, 1013 and related text);

linking a software component to the at least one computer-executable file using at least one class extension declaration (e.g. FIG. 1, LINKER and related text); and

creating the software development tool via the linked software component and computer-executable file (e.g. FIG. 1, 1011, 1016 and related text).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3, 14 and 28-29 rejected under 35 U.S.C. 103(a) as being unpatentable over Koizumi et al. (US 2002/0026633 A1) in view of Radigan (US 2004/0098710 A1).

Per claim 2, Koizumi substantially discloses the invention as claimed above. Further, Koizumi teaches how to develop different machine language program (e.g. FIG. 1, 1012, 1016) using specification information 1018 of the target machines (paragraph [0131]). However, Koizumi was silent regarding the one or more computer-readable media of claim 1 wherein the architecture is scalable to produce target software development tools ranging from lightweight just-in-time (JIT) compilers (to whole program optimizing compilers. Nevertheless, as evidenced by the vivid teachings of Radigan, it is known to modify the specification information 1018 taught by Koizumi to develop lightweight just-in-time (JIT) compilers (to whole program optimizing compilers as it is clearly suggested by Radigan (paragraph [0002]).

Per claim 3, Koizumi substantially discloses the invention as claimed above. Further, Koizumi teaches how to develop different machine language program (e.g. FIG. 1, 1012, 1016) using specification information 1018 of the target machines (paragraph [0131]). However, Koizumi was silent regarding the architecture can be configured to produce a target software development tool with varying ranges of memory footprint, compilation speed. Nevertheless, as evidenced by the vivid teachings of Radigan, it is known to modify the specification information 1018 taught by Koizumi to produce a target software development tool with varying ranges of memory footprint, compilation speed as it is clearly suggested by Radigan (paragraph [0002]).

Per claim 14, Koizumi substantially discloses the invention as claimed above. Further, Koizumi teaches how to develop different machine language program (e.g. FIG. 1, 1012, 1016) using specification information 1018 of the target machines (paragraph [0131]). However, Koizumi was silent regarding the target software development tool comprises a JIT compiler. Nevertheless, as evidenced by the vivid teachings of Radigan, it is known to use JIT compiler to performs just-in-time translation of abstract byte codes to machine code under very tight time constraints that a normal compiler would not deal as it is clearly suggested by Radigan (paragraph [0002]).

Per claim 28, Koizumi substantially discloses the invention as claimed above. Further, Koizumi teaches a native compiler an analysis tool, and a compiler development kit CDK (e.g. FIG. 1, 1001, 1012, 1016). However, Koizumi was silent regarding the software development tool comprises a JIT compiler,. Nevertheless, as evidenced by the vivid teachings of Radigan, it is known to use JIT compiler to performs just-in-time translation of abstract byte codes to machine code under very tight time constraints that a normal compiler would not deal as it is clearly suggested by Radigan (paragraph [0002]).

Per claim 29, Koizumi substantially discloses the invention as claimed above. Further, Koizumi teaches a optimizer functionality, and defect detection tool functionality (e.g. FIG. 1, 1001, 1012, 1016). However, Koizumi was silent regarding the software development tool comprises a Pre-JIT compiler functionality. Nevertheless, as evidenced by the vivid teachings of Radigan, it is known to use JIT compiler to performs just-in-time translation of abstract byte

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codes to machine code under very tight time constraints that a normal compiler would not deal as it is clearly suggested by Radigan (paragraph [0002]).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ISAAC T. TECKLU whose telephone number is (571)272-7957. The examiner can normally be reached on M-TH 9:300A - 8:00P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Isaac T Tecklu/
Examiner, Art Unit 2192

/Tuan Q. Dam/
Supervisory Patent Examiner, Art Unit 2192

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